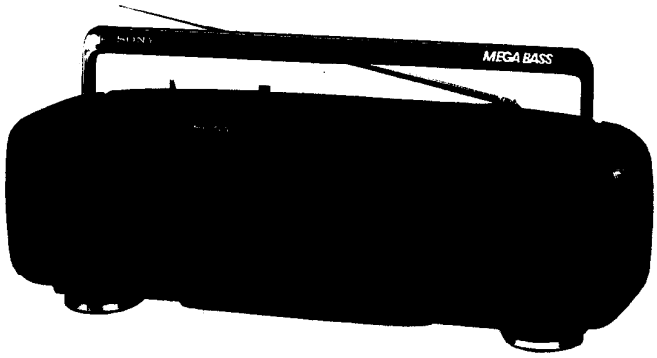
CFS-D30L

SERVICE MANUAL

AEP Model
UK Model



Model Name Using Similar Mechanism	CFS-D20L
Tape Transport Mechanism Type	MF-D30-78D

SPECIFICATIONS

Tuner frequency range
AEP, UK, West Germany model:
FM: 87.6–107MHz
MW: 531–1,602kHz
LW: 153–281kHz
SW: 5.95–18MHz
Italian model:
FM: 87.5–108MHz
MW: 526.5–1,606.5kHz
LW: 148.5–283.5kHz
SW: 5.95–18MHz

	FM	MW, LW, SW
Intermediate frequency	10.7 MHz	455 kHz

Frequency response: 80 Hz–10,000 Hz
Speakers: 10 cm (4 in.) dia. full range × 2.
8 cm (3 in.) super woofer × 1
Output: Headphones jack (stereo minijack)
for 16–68 ohm impedance headphones
Maximum power output: 5 W (2.5 W + 2.5 W), super woofer 5.8 W
Power requirements: 9 V DC, six R20 (size D) batteries
Power consumption: 20 W (Except UK model)
30 W (UK model)
Power requirements: UK model: 240 V AC, 50 Hz
AEP, West Germany, Italian model:
220 V AC, 50 Hz

Battery life

Batteries	FM recording
Sony SUM-1 (NS)	Approx. 6 hours
Sony AM1 alkaline	Approx. 17 hours

Dimensions: Approx. 552 × 172 × 188 mm (w/h/d)
(21 3/4 × 6 3/4 × 7 3/8 inches)
Weight: Approx. 4.8 kg (10 lb 9 oz) incl. batteries
Accessory supplied: AC power cord (1)

MICROFILM

RADIO CASSETTE-CORDER

SONY®

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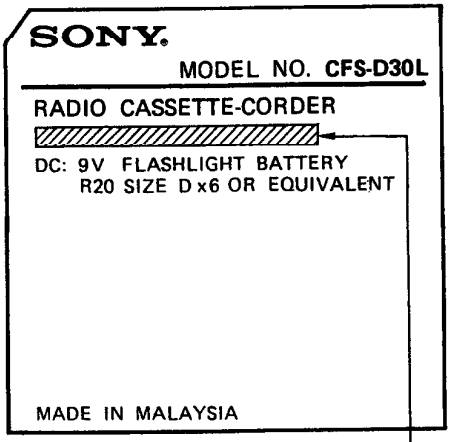
MODEL IDENTIFICATIONS

– Specification Labels –



AEP, West Germany, Italian model: AC: 220V ~ 50Hz 20W
UK model: AC: 240V ~ 50Hz 30W

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

9284

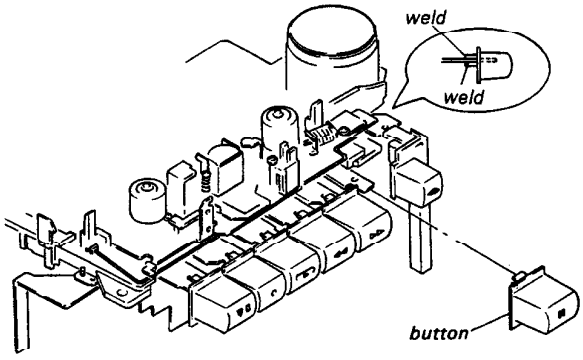
SERVICING NOTE

- **Note for tape operation buttons**

When replacing tape operation buttons, cut them off and attach new parts with locking compound.

(REMOVAL OF TAPE OPERATION BUTTON)

Cut the weld indicated in the figure.



Note on installation

1. Insert the buttons firmly.

2. Attach the buttons with locking compound.

- **Note on replacing ceramic filters CF1 and CF3.**

Two ceramic filters which have the same center frequency are included in the part whose part No. is 1-567-166-00.

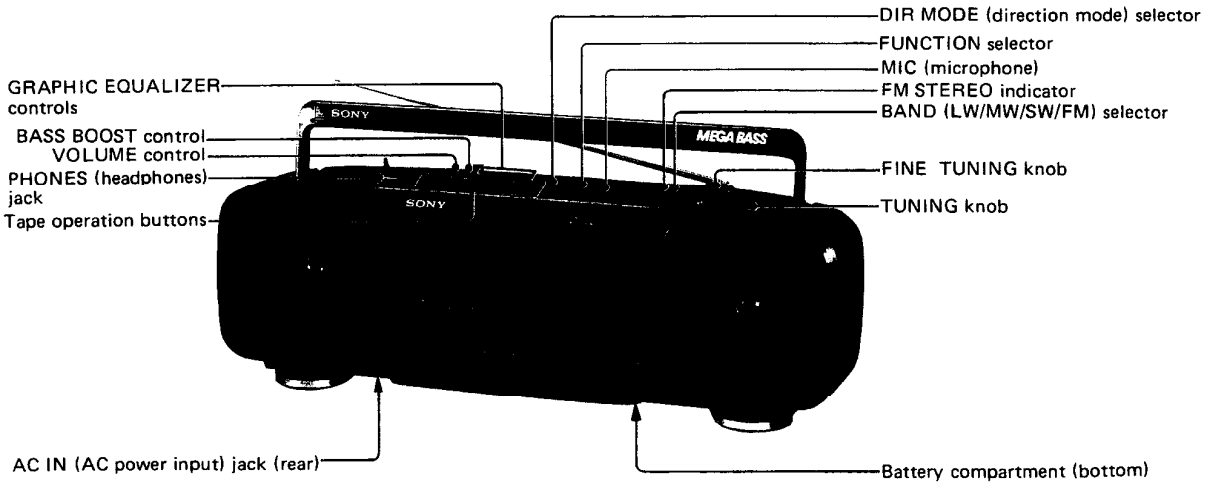
· For CF1 (FM IF) . . . . . 3 leads

· For CF3 (FM discriminator). . . 2 leads

when replacing CF1 or CF3, be sure to replace both of them with new parts.

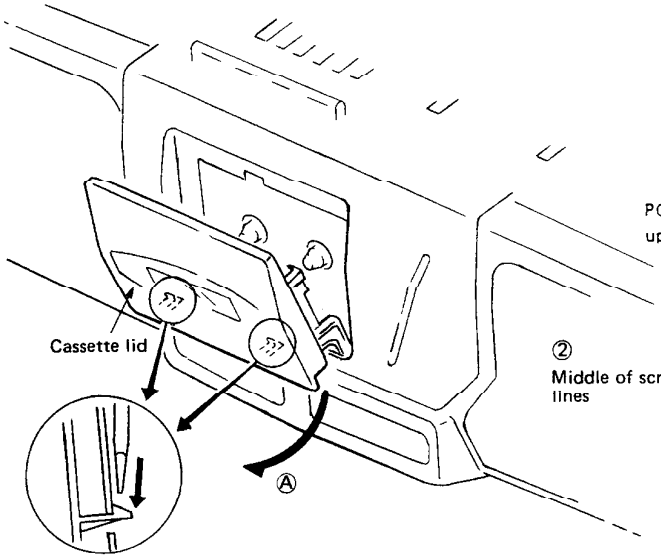
SECTION 1
GENERAL

LOCATION AND FUNCTION OF CONTROLS



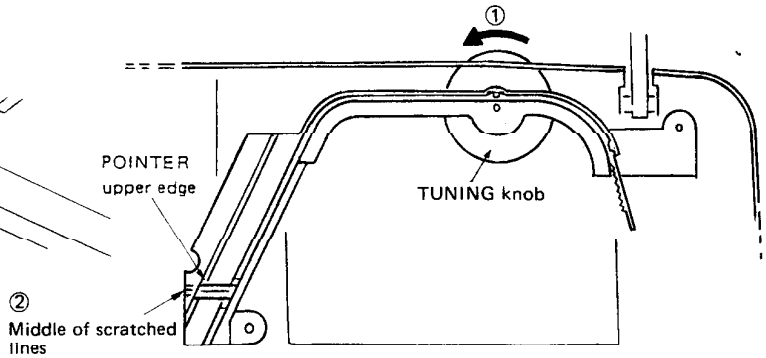
SECTION 2
DISASSEMBLY

CASSETTE LID REMOVAL



1. Depress claws to release.
2. Remove CASSETTE LID in the direction of arrow Ⓐ

DIAL POINTER SETTING



1. Turn TUNING knob fully counterclockwise.
2. Set the POINTER upper edge to the middle of the scratched lines.
3. Mesh gear of POINTER with TUNING knob.

SECTION 3
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab :
   record/playback head — pinch roller
   erase head — rubber belts
   capstan — idlers
2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be perfomed with the rated power supply voltage unless otherwise noted.
6. Power supply voltage : 9V dc

Torque Measurement

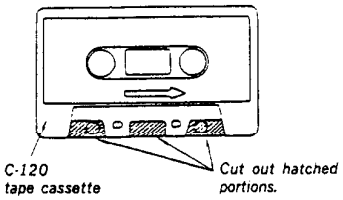
Torque	Torque meter	Meter reading
Forward	CQ-102C	24 – 70g•cm (0.33 – 0.97 oz•inch)
Forward back tension	CQ-102C	2 – 6g•cm (0.028 – 0.083 oz•inch)
Reverse	CQ-102RC	24 – 70g•cm (0.33 – 0.97 oz•inch)
Reverse back tension	CQ-102RC	2 – 6g•cm (0.028 – 0.083 oz•inch)
Fast Forward	CQ-201B	more than 85g•cm (more than 1.18 oz•inch)
Rewind	CQ-201B	85 – 150g•cm (1.18 – 2.08 oz•inch)

Tape Tension Measurement

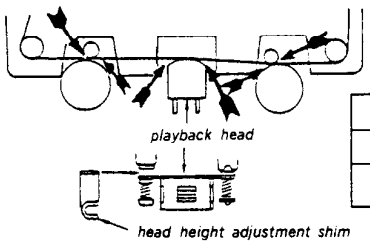
Mode	Meter	Meter Reading
Forward	CQ-403A	more than 110g (more than 3.88 oz)
Reverse	CQ-403R	

Head Height Adjustment

1. Use CQ-009C (Part No. 8-909-708-01) or prepare an adjustment cassette as shown below.



2. In playback mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at portions shown by arrows.



Part No.	t
3-578-138-01	0.1
3-578-138-11	0.2

SECTION 4
ELECTRICAL ADJUSTMENTS

4-1. TAPE RECORDER SECTION

Standard Output Level

Output terminal	front speaker	rear speaker	headphones
load impedance	3.2Ω	3Ω	32Ω
output signal level	0.775 V (0dB)	0.775 V (0dB)	0.25 V (–10dB)

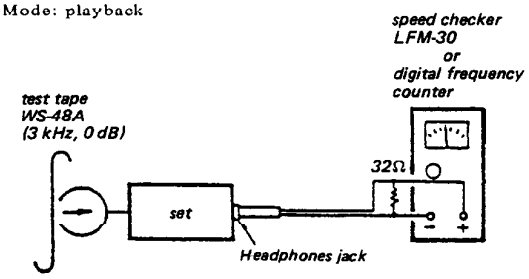
Test Tape

Type	Signal	Used for
WS-48A	3kHz, 0dB	tape speed adjustment
P-4-A063	6.3kHz, –10dB	head azimuth adjustment

Tape Speed Adjustment

Procedure:

Mode: playback

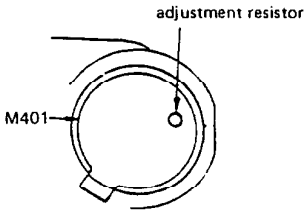


Adjustment Value:

Speed checker	Digital frequency counter
±3%	2,910 to 3,090 Hz

Frequency difference between the beginning and the end of the tape should be within 1% (30Hz).

Adjustment Location:



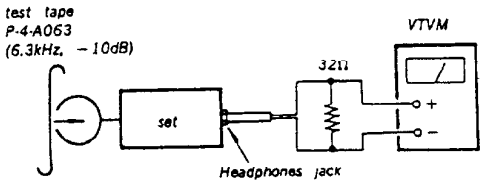
Head Azimuth Adjustment

Parform adjustments in both forward and reverse playback modes.

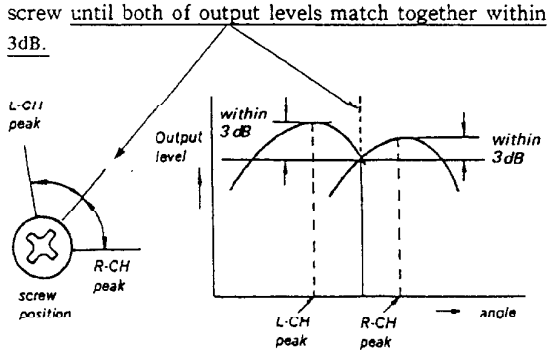
Output level of both forward and reverse playback modes should match together.

Procedure :

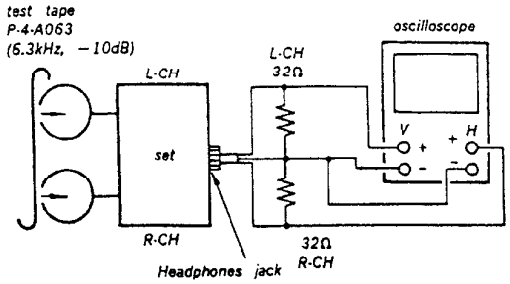
1. Mode : playback

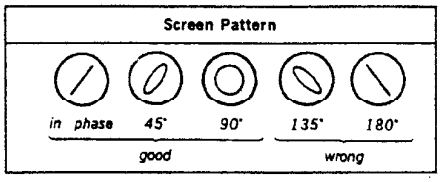


2. Turn the adjustment screw for the maximum output levels. If these levels do not match. turn the adjustment screw until both of output levels match together within 3dB.



3. Phase Check
   Mode : playback

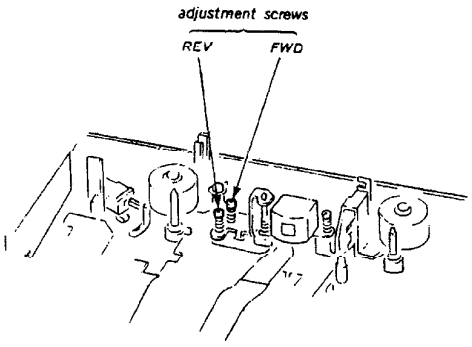




Note : Finish the screw adjustment with a turn in the clockwise direction.

After the adjustment, apply suitable locking compound to the adjustment screw.

Adjustment Location :

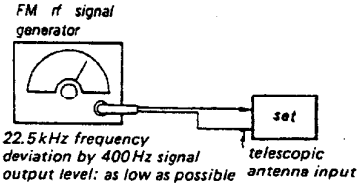


4-2. RADIO SECTION

• FM Section

Setting :

BAND switch: FM

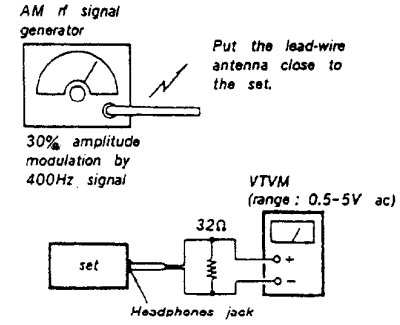

FM rf signal generator
set
22.5kHz frequency deviation by 400Hz signal output level: as low as possible
telescopic antenna input

• AM Section

Setting :

BAND switch: MW or LW

FINE TUNNG: mechanical center

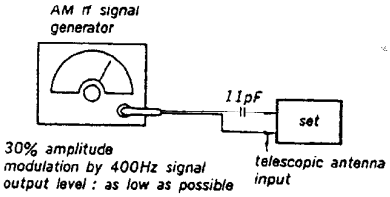


• SW Section

Setting :

BAND switch : SW

FINE TUNE knob : mechanical CENTER


AM rf signal generator
11pF
set
30% amplitude modulation by 400Hz signal output level : as low as possible
telescopic antenna input

- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

FM FREQUENCY COVERAGE ADJUSTMENT		
Adjust for a maximum reading on VTVM.		
	L2	CT2
AEP, UK model	87.0MHz	108.3MHz
West Germany model	87.35MHz	107.8MHz
Italian model	87.35MHz	108.25MHz

FM TRACKING ADJUSTMENT		
Adjust for a maximum reading on VTVM.		
	L1	CT1
AEP, UK model	87.0MHz	108.3MHz
West Germany model	87.35MHz	107.8MHz
Italian model	87.35MHz	108.25MHz

AM IF ADJUSTMENT
Adjust for a maximum reading on VTVM.
T1
455kHz

• ( ): Italian model

MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L4	CT4
520(516)kHz	1,680(1,630)kHz

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L3	CT3
600kHz	1,400kHz

• ( ): Italian model

LW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L8	CT8
145(140)kHz	295(293)kHz

LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L7	CT7
160kHz	260kHz

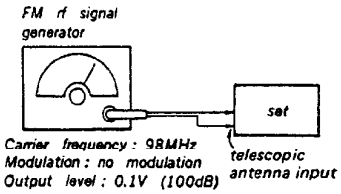
SW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L6	CT4
5.8MHz	18.4MHz

SW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L5	CT5
5.8MHz	18.4MHz

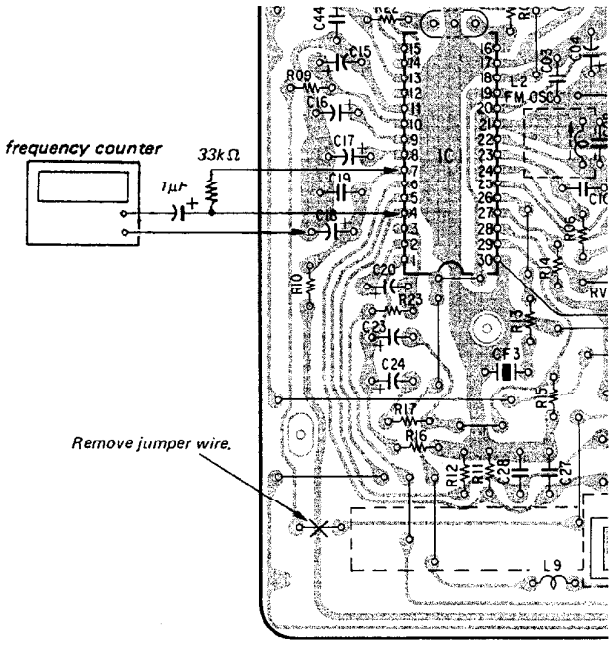
VCO Adjustment

A) Regular Method

Procedure :



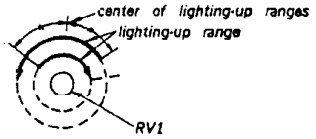
1. Remove jumper wire as shown below.
2. Connect frequency counter to the set as shown below
3. Tune the set to 98MHz.
4. Adjust RV1 for 76kHz±500Hz reading on the frequency counter.
5. After adjustment, connect jumper wire removed in step 1.



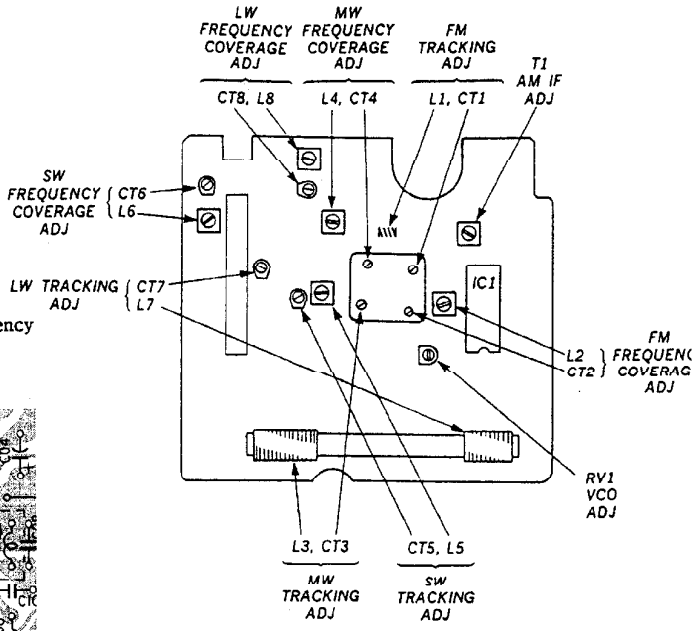
B) Simple Method

Procedure :

1. Tune the set to the FM stereo broadcasting signal.
2. Turn RV1 clockwise or counterclockwise and memorize the lighting-up range of the FM STEREO lamp.
3. Secure RV1 at the center of the lighting-up range of both turns as shown below.

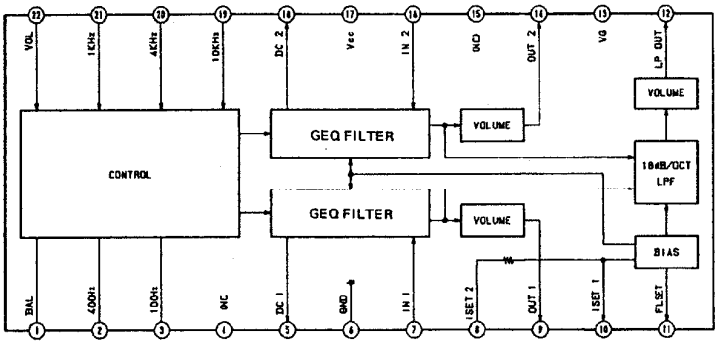


Adjustment Location : tuner board



SECTION 5
DIAGRAMS

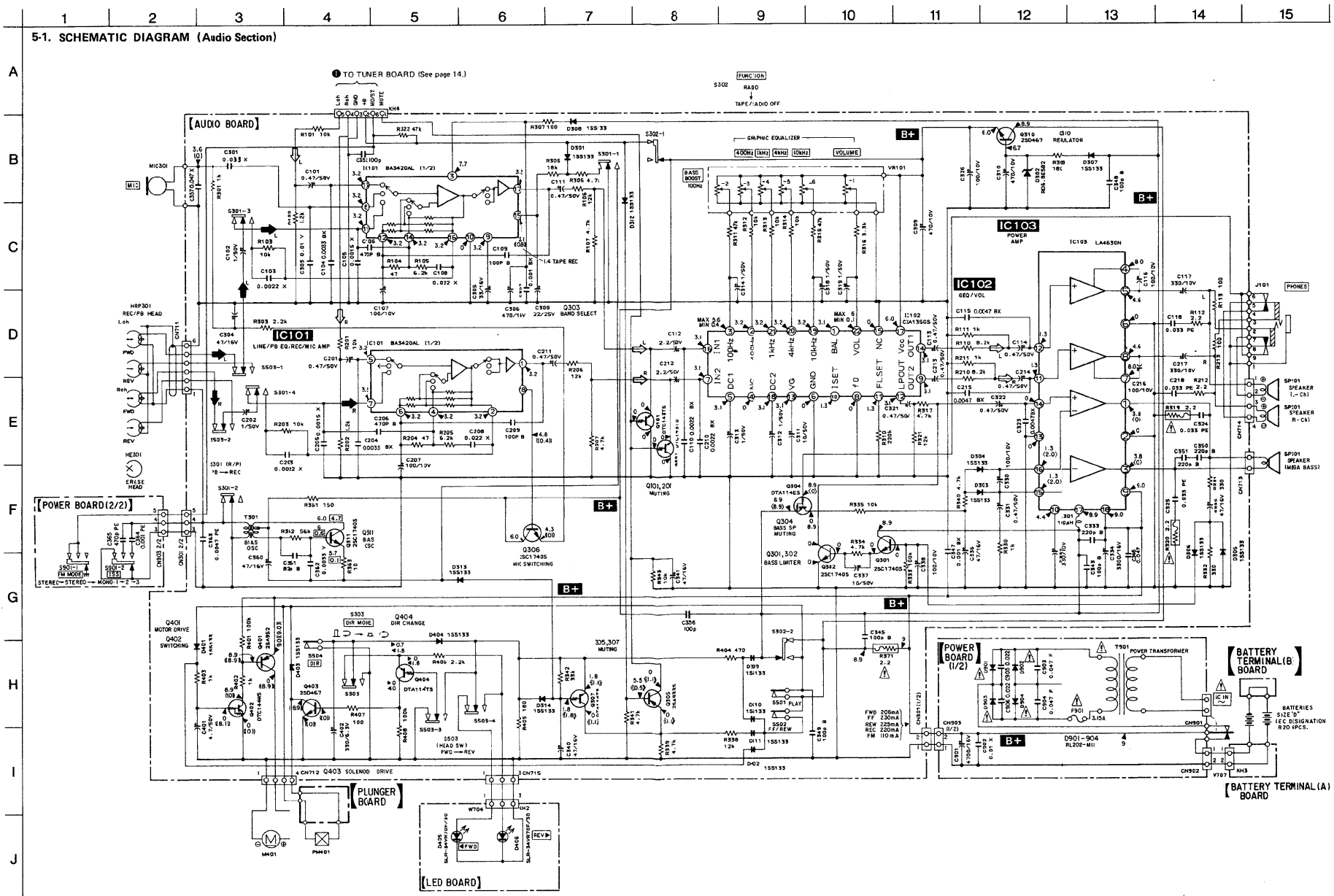
IC102 CXA1350S



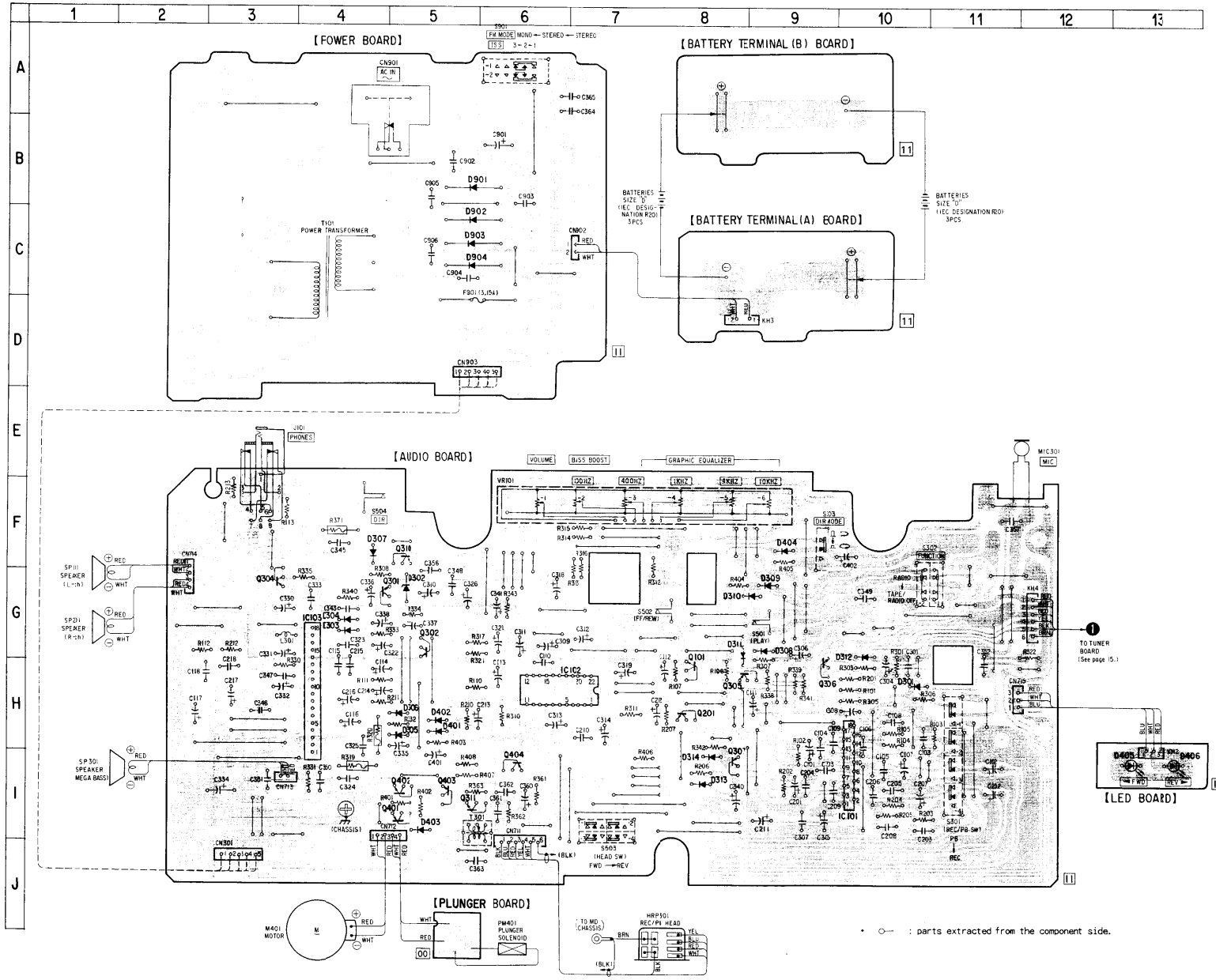
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- : nonflammable resistor.
- : fusible resistor.
- B+ : B +line.
- Total current is measured with no cassette installed.
- Power voltage is 9V dc and fed with requrated dc power supply from battery terminal.
- Voltage and waveforms are dc with respect to ground under no signal conditions.
  no mark: FM : REC
  《 》: PLAY ▶ : FWD
  〈 〉: HEADPHONE IN ◀ : REV
  ❮ ❯: FF/REW
- Voltages are taken with a VOM. (Input impedance 10MΩ) Voltage variations may be noted due to normal production torerances.
- Signal path.
  ⇨ : FM
  ➡ : PB

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

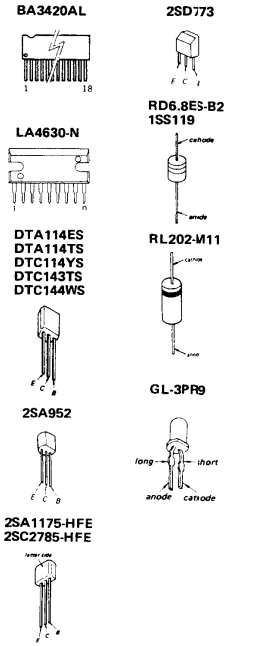
5-1. SCHEMATIC DIAGRAM (Audio Section)



5-2. PRINTED WIRING BOARDS (Audio Section)



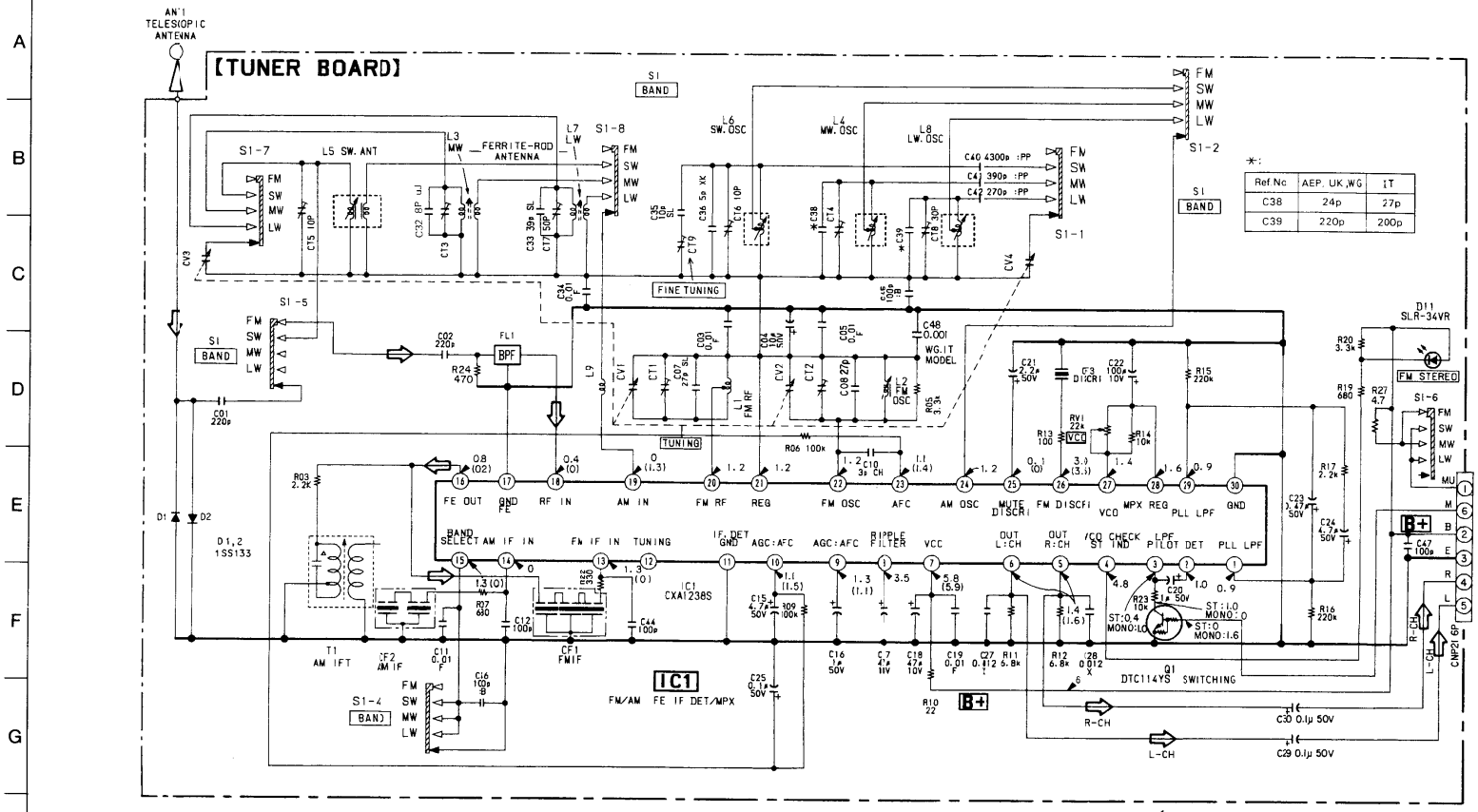
5-3. SEMICONDUCTOR LEAD LAYOUTS



- **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D301	H-10	D903	C-5
D302	G-5	D904	C-5
D303	G-4		
D304	G-4	IC101	I-10
D305	H-5	IC102	H-6
D306	H-5	IC103	G-4
D307	F-4		
D308	G-9	Q101	G-8
D309	G-9	Q201	H-8
D310	G-8	Q301	G-5
D311	G-8	Q302	G-5
D312	G-10	Q304	G-3
D313	I-8	Q305	H-8
D314	I-8	Q306	H-9
D401	H-5	Q307	H-8
D402	H-5	Q310	F-5
D403	I-5	Q311	I-5
D404	F-8	Q401	I-5
D405	I-13	Q402	I-5
D406	I-13	Q403	I-5
D901	B-5	Q404	I-6
D902	C-5		

5-4. SCHEMATIC DIAGRAM (Tuner Section)

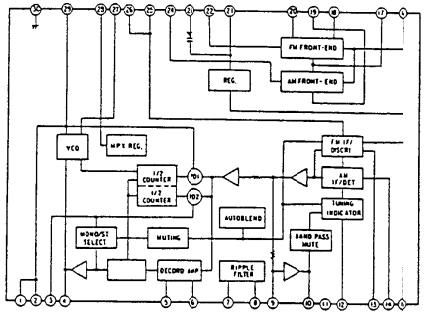


* :		
Ref No.	AEP, UK, WG	IT
C38	24p	27p
C39	220p	200p

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantaiums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- B+ : B + line.
- ▭ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no signal (detuned) conditions.
  no mark: FM
  ( ) : LW/MW/SW
- Voltages are taken with a VOM. (Input impedance 10MΩ) Voltage variations may be noted due to normal production tolerances
- Signal path.
  ⇨ : FM
- abbreviation WG West Germany.
  IT Italian.
- Switch with sliding contact indicated by hatched lines shows shorting type.

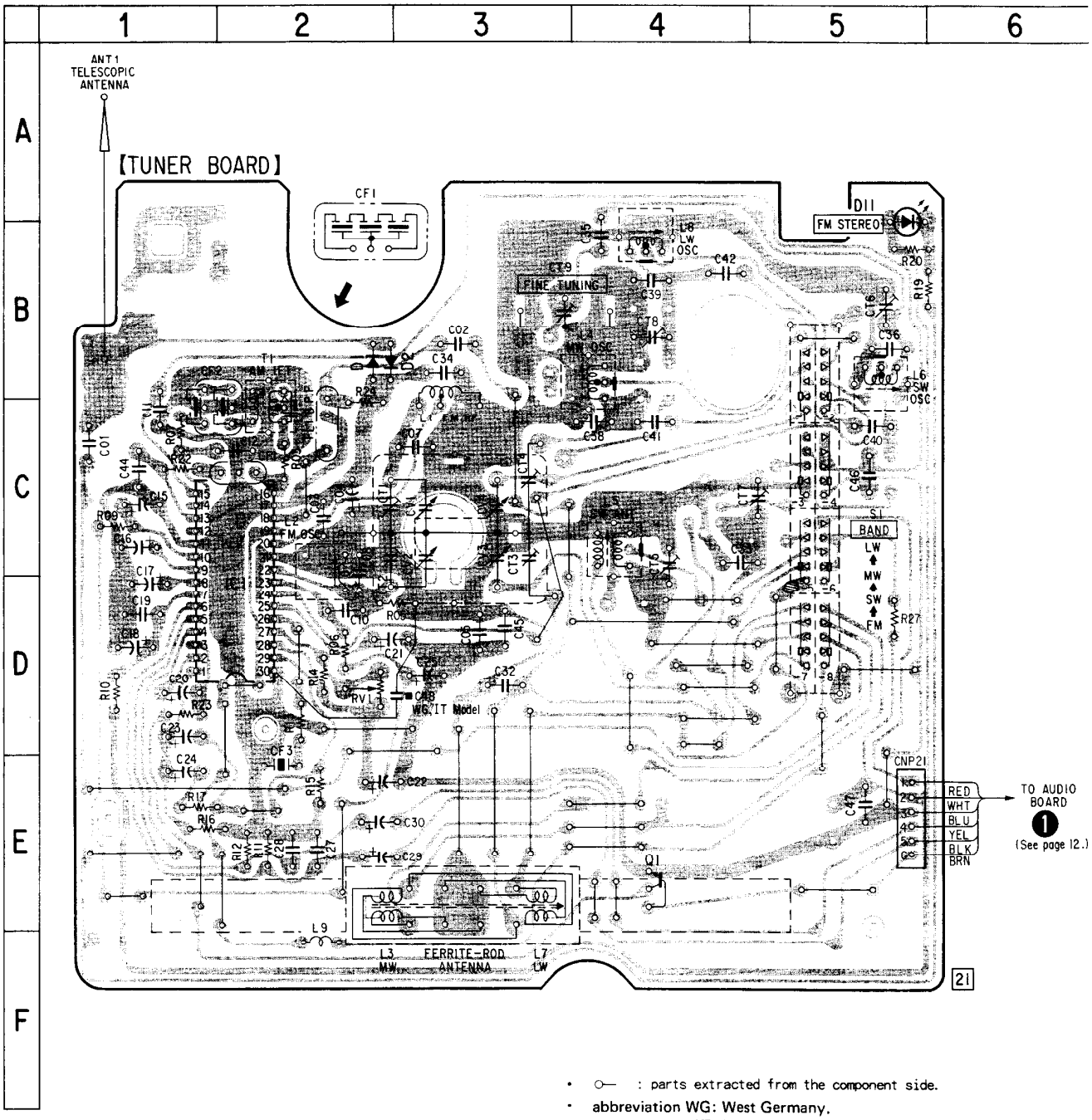
• IC BLOCK DIAGRAM

IC1 CXA1238S



5-5. PRINTED WIRING BOARDS

–Tuner Section–



- ○— : parts extracted from the component side.
- abbreviation WG: West Germany.
  IT: Italian.

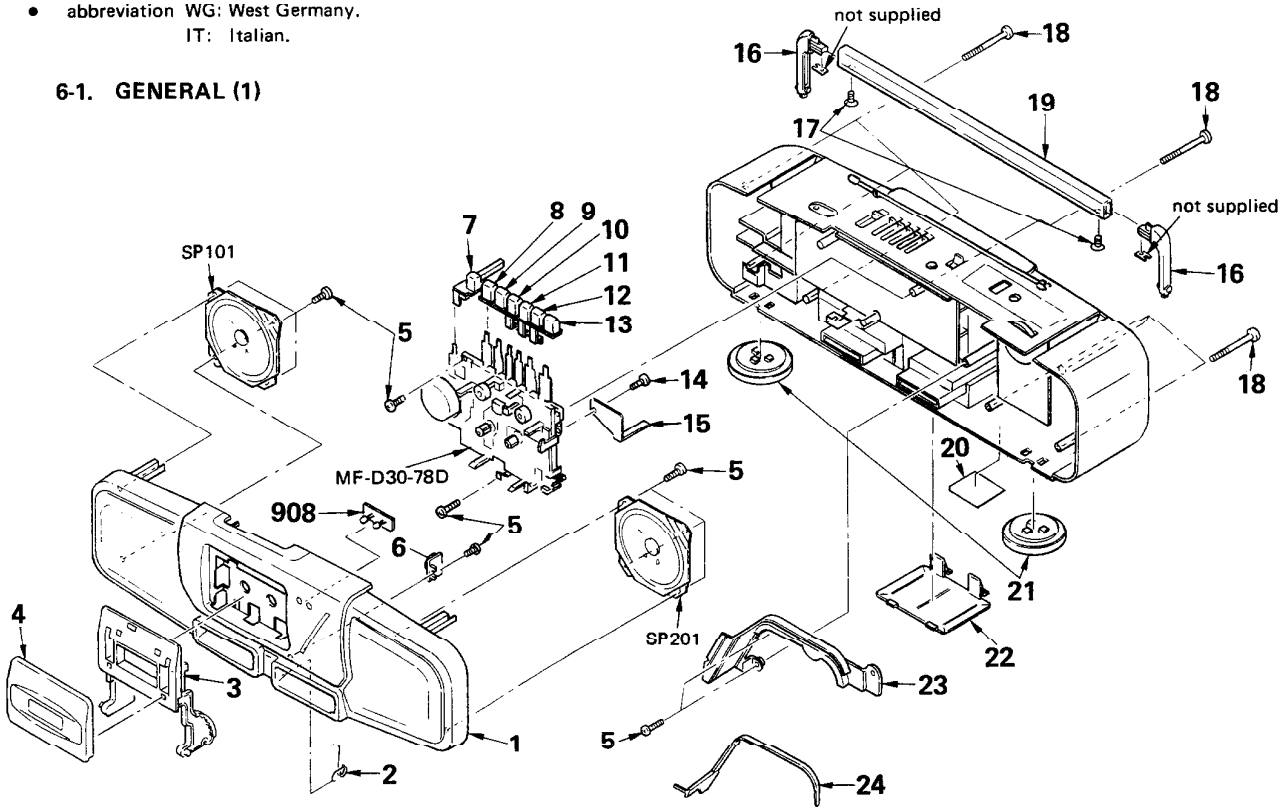
SECTION 6
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- abbreviation WG: West Germany.
  IT: Italian.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts' Color

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

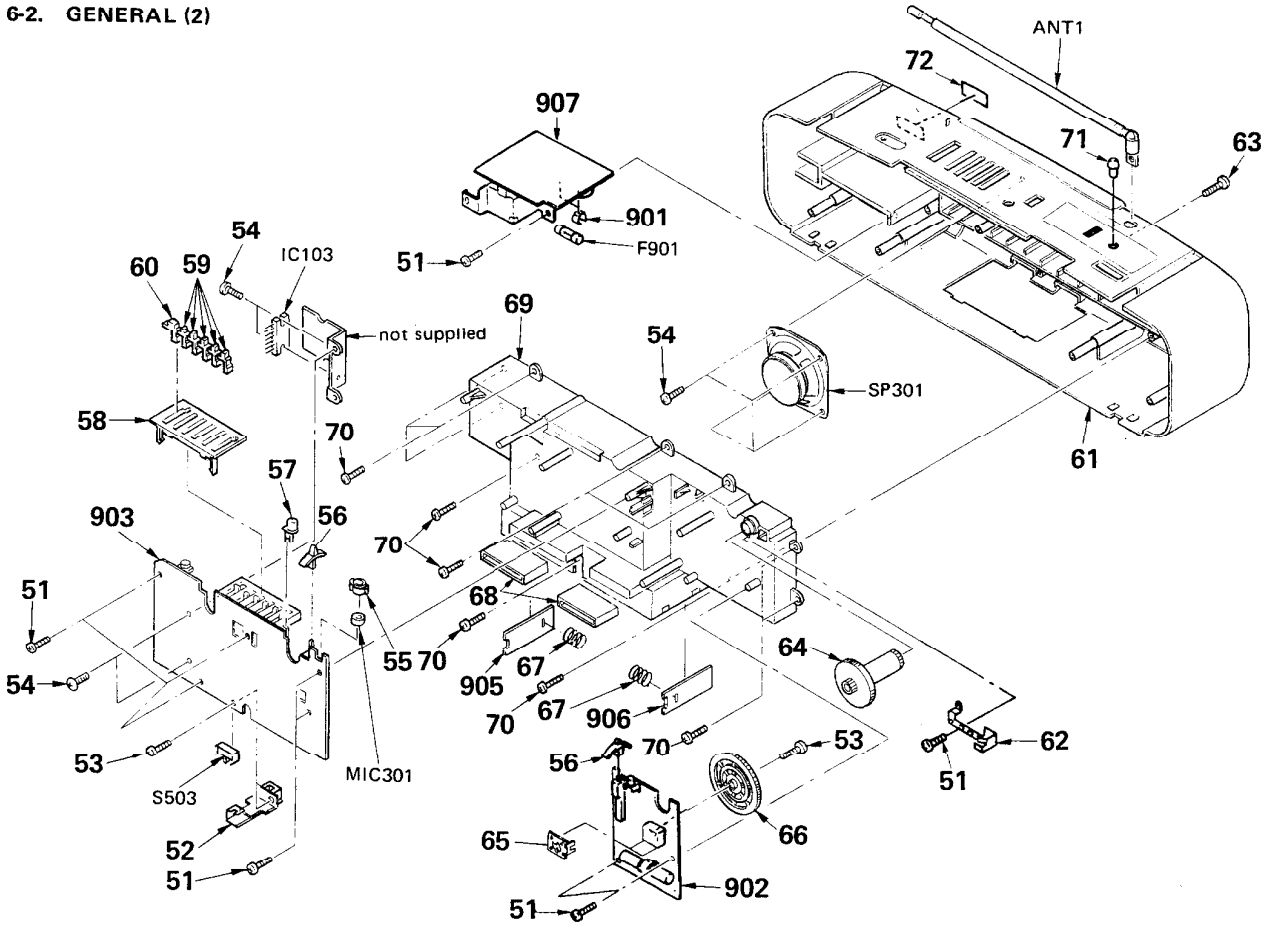
6-1. GENERAL (1)



No.	Part No.	Description	Remarks
1	X-3336-816-1	(AEP,WG,UK)...CABINET, FRONT ASSY	
	X-3336-817-1	(IT).....CABINET, FRONT ASSY	
2	3-336-856-01	SPRING (CASSETTE)	
3	3-336-871-01	HOLDER, CASSETTE	
4	X-3336-813-1	CASSETTE LID ASSY	
5	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
6	3-351-377-11	DAMPER	
7	3-336-878-01	BUTTON (DIR)	
8	3-336-865-01	BUTTON (PAUSE)	
9	3-336-873-01	BUTTON (FF)	
10	3-336-874-01	BUTTON (REW)	
11	3-336-872-01	BUTTON (PLAY)	
12	3-336-867-01	BUTTON (REC)	
13	3-336-866-01	BUTTON (STOP/EJECT)	
14	7-621-770-87	SCREW +BVTT 2.6X5 (S)	

No.	Part No.	Description	Remarks
15	*3-336-852-01	SPRING (REC), LEAF	
16	3-343-063-41	PLATE, HANDLE (BLK)	
17	7-685-247-19	SCREW +KTP 3X10 TYPE2 SLIT	
18	3-334-187-11	SCREW (3X50), TAPPING, + BV	
19	3-338-481-01	HANDLE	
20	*3-338-487-01	(IT)....LABEL, MODEL NUMBER	
	*3-338-491-01	(UK)....LABEL, MODEL NUMBER	
	*3-338-493-01	(WG)....LABEL, MODEL NUMBER	
21	3-336-863-01	FOOT	
22	3-336-860-01	LID, BATTERY CASE	
23	*3-336-880-01	CHASSIS (TUN)	
24	3-336-864-01	POINTER	
908	*1-631-379-11	PC BOARD, LED	
SP101	1-544-154-11	SPEAKER (L-CH)	
SP201	1-544-154-11	SPEAKER (R-CH)	

6-2. GENERAL (2)

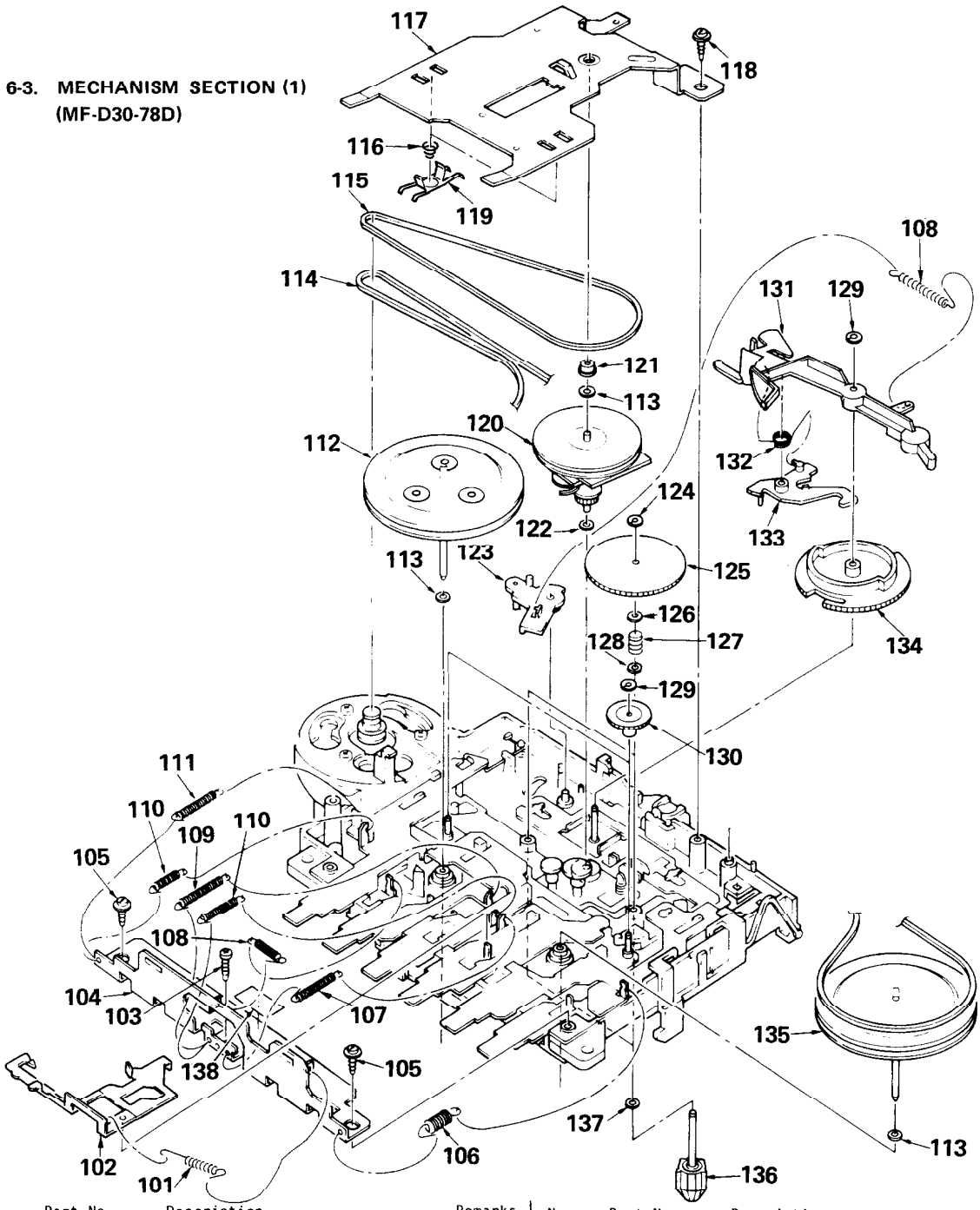


No.	Part No.	Description	Remarks
51	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
52	X-3337-813-1	BRACKET SW ASSY	
53	7-621-770-87	SCREW +BVTT 2.6X5 (S)	
54	7-685-647-79	SCREW +BVTP 3X10 TYPE2 SLIT	
55	3-321-122-01	CUSHION, MICROPHONE	
56	3-336-849-01	KNOB (FUNCTION)	
57	3-351-312-01	BUTTON (PUSH)	
58	*3-336-861-01	BRACKET (VR)	
59	3-336-851-01	KNOB (GEQ)	
60	3-336-858-01	KNOB (VOL)	
61	3-336-882-11	(IT, WG, UK) . . . CABINET (REAR)	
	3-336-882-51	(AEP) . . . . . CABINET (REAR)	
62	*3-338-483-01	TERMINAL BOARD, ANTENNA	
63	7-682-550-04	SCREW +B 3X12	
64	*3-336-862-01	KNOB (TUNING)	
65	*3-890-726-00	PLATE (C), SHIELD	
66	3-338-505-01	DRUM, TUNING CAPACITOR	
67	3-336-886-01	TERMINAL, MINUS	

No.	Part No.	Description	Remarks
68	*3-336-850-01	HORN, DODEKA	
69	*3-336-881-01	CHASSIS, DODEKA	
70	7-685-649-71	SCREW +BVTP 3X14	
71	3-336-859-01	KNOB (FINE)	
72	*3-703-845-01	(UK)...LABEL (N)(U/C), MAIN CAUTION	
901	*1-533-189-11	HOLDER, FUSE	
902	*A-3266-582-A	(AEP,WG,UK)...MOUNTED PCB, TUNER	
	*A-3266-584-A	(IT).....MOUNTED PCB, TUNER	
903	*A-3270-670-A	MOUNTED PCB, AUDIO	
905	*1-631-376-11	PC BOARD, BATTERY TERMINAL (A)	
906	*1-631-377-11	PC BOARD, BATTERY TERMINAL (B)	
907	*1-631-378-11	PC BOARD, POWER	
ANT1	1-501-378-11	ANTENNA, TELESCOPIC	
F901	⚠1-532-237-00	FUSE, TIME-LAG (3.15A)	
SP301	1-544-193-11	SPEAKER (MEGA BASS)	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

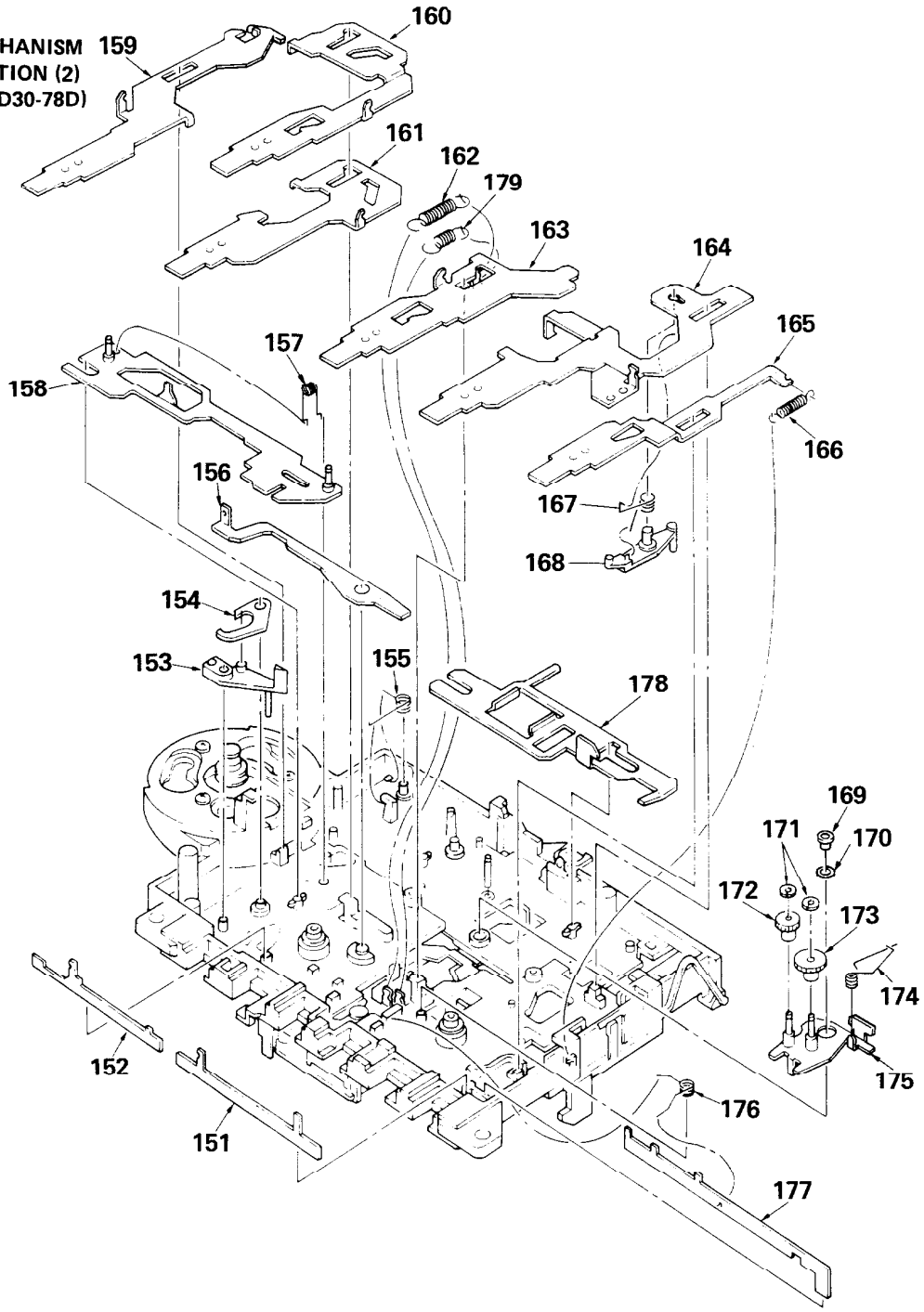
6-3. MECHANISM SECTION (1) (MF-D30-78D)



No.	Part No.	Description	Remarks
101	3-330-605-01	SPRING, TENSION	
102	*3-330-606-01	LEVER, SELECTION, S.OFF	
103	7-685-105-19	TPG +P 2X8, TYPE 2, NON-SLIT	
104	*3-322-518-01	RETAINER, LEVER	
105	7-687-233-11	SCREW (+ PTPWH) (2.6X6)	
106	3-322-691-01	SPRING, TENSION	
107	3-322-526-01	SPRING, TENSION(POWER TENSION)	
108	3-322-527-01	SPRING, TENSION	
109	3-328-103-01	SPRING, TENSION	
110	3-322-522-01	SPRING, TENSION	
111	3-530-260-00	SPRING, TENSION	
112	X-3330-601-1	FLYWHEEL (NR) ASSY	
113	3-701-437-11	WASHER (t=0.25)	
114	3-322-533-01	BELT	
115	3-657-035-XX	BELT, COUNTER	
116	3-322-676-01	SPRING (S), COMPRESSION	
117	*3-322-519-01	RETAINER, THRUST	
118	7-685-134-19	SCREW (+ PTPWH) (2.6X8)	
119	3-322-524-01	SPRING	

No.	Part No.	Description	Remarks
120	X-3322-540-1	DETECTION BLOCK ASSY	
121	3-322-566-01	BEARING, PULLEY	
122	3-701-437-01	WASHER (t=0.13)	
123	3-330-827-01	LEVER (B), GEAR LOCK	
124	3-578-223-21	WASHER, NYLON	
125	3-322-508-01	GEAR, REEL	
126	3-322-660-01	WASHER (B)	
127	3-321-541-01	SPRING, COMPRESSION	
128	3-322-659-01	WASHER (A)	
129	3-307-948-01	WASHER, NYLON	
130	3-322-556-01	GEAR, FR	
131	3-330-833-01	LEVER (C), OA	
132	3-322-534-01	SPRING	
133	3-330-826-01	LEVER (D), OA	
134	3-322-553-01	GEAR, CAM	
135	X-3322-507-1	FLYWHEEL (R) ASSY	
136	X-3322-502-1	CLAW ASSY, REEL	
137	3-545-715-00	WASHER	
138	3-831-441-11	CUSHION (T)	

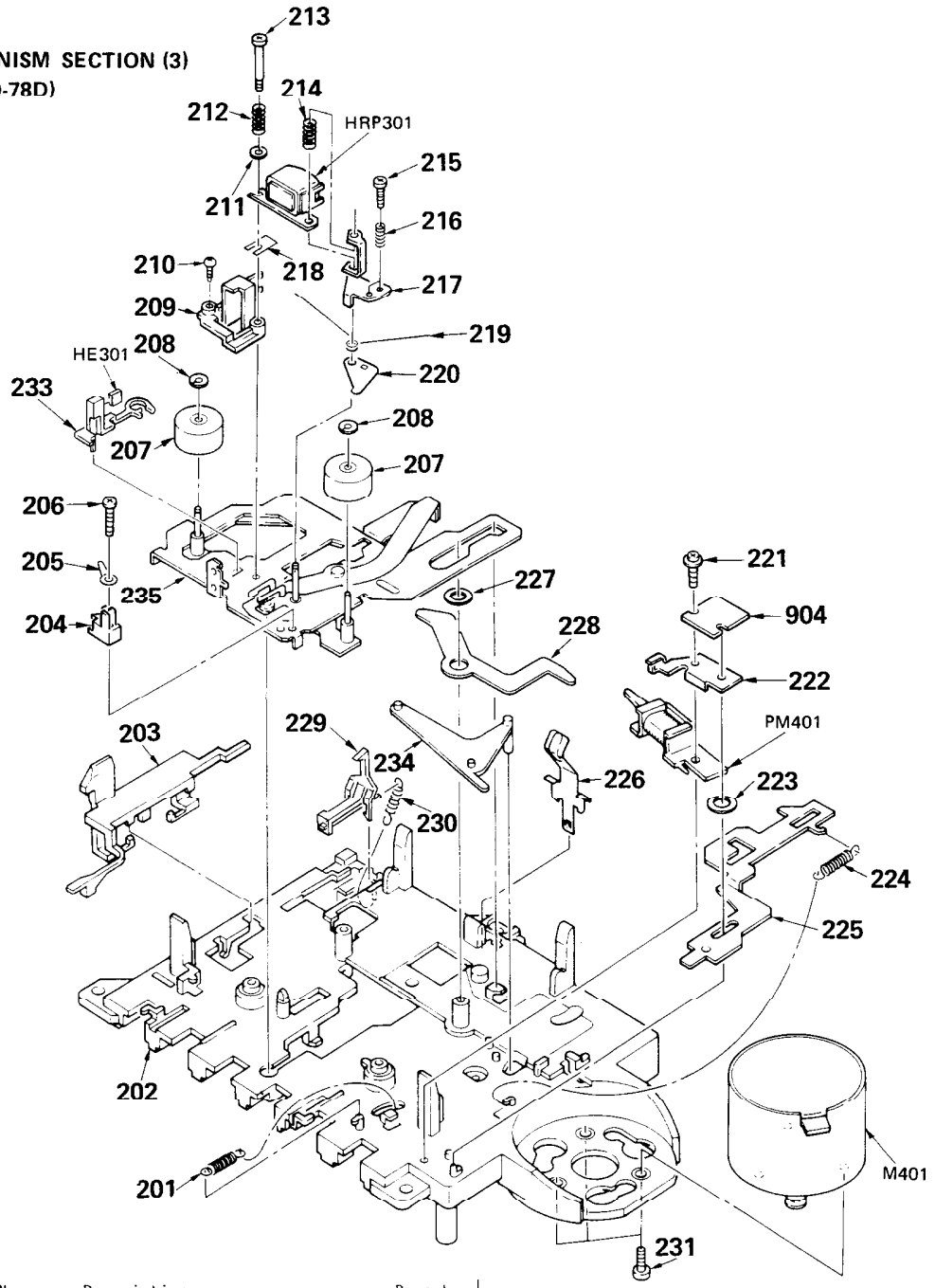
6-4. MECHANISM SECTION (2) (MF-D30-78D)



No.	Part No.	Description	Remarks
151	*3-330-604-01	PLATE (C), LOCK	
152	*3-322-587-01	PLATE (B), LOCK	
153	X-3330-610-1	LEVER (R) ASSY, S.OFF	
154	3-322-555-01	LEVER (E), S.OFF	
155	3-322-577-01	SPRING	
156	*3-322-517-01	LEVER, AMS	
157	3-322-578-01	SPRING	
158	*X-3322-505-1	LEVER ASSY, FR	
159	*3-330-829-11	LEVER (C), PAUSE BUTTON	
160	3-322-515-11	LEVER, REW BUTTON	
161	*3-322-585-11	LEVER, FF BUTTON	
162	3-322-520-01	SPRING, TENSION	
163	*3-322-584-11	LEVER, PLAY BUTTON	
164	*3-322-591-41	LEVER, REC BUTTON	
165	*3-322-583-11	LEVER, STOP BUTTON	

No.	Part No.	Description	Remarks
166	3-322-528-01	SPRING, TENSION	
167	3-322-575-01	SPRING	
168	3-322-554-01	ARM, REC LOCK	
169	3-322-513-01	COLLAR	
170	3-322-689-01	RING	
171	3-570-615-00	POLY-WASHER (DIA.1.2)	
172	3-343-146-01	GEAR (A), FWD	
173	3-343-145-01	GEAR (B), FWD	
174	3-322-576-01	SPRING	
175	*X-3339-320-1	ARM ASSY (M), FWD GEAR	
176	3-322-579-01	SPRING	
177	*3-322-589-01	LEVER, SWITCH	
178	*3-330-602-01	LEVER (R), DIRECTION	
179	3-322-693-01	SPRING, TENSION	

6-5. MECHANISM SECTION (3)
(MF-D30-78D)



No.	Part No.	Description	Remarks
201	3-330-633-01	SPRING, TENSION	
202	A-3102-109-A	CHASSIS ASSY, MECHANICAL	
203	3-322-512-01	LEVER, EJECT	
204	3-326-625-01	RETAINER, PC BOARD	
205	7-623-505-01	LUG, 2	
206	7-621-255-65	SCREW +P 2X10	
207	3-703-597-41	PINCH ROLLER, STANDARD	
208	3-307-948-01	WASHER, NYLON	
209	*3-339-701-01	GUIDE, TAPE	
210	7-621-772-20	SCREW +B 2X5	
211	7-688-001-01	W 2, SMALL	
212	3-318-106-01	SPRING (H), COMPRESSION	
213	3-322-567-11	SCREW, PAN, STEP	
214	3-341-163-01	SPRING, COMPRESSION	
215	7-627-851-27	SCREW, PRECISION +P 1.4X5	
216	3-322-531-01	SPRING, COMPRESSION	
217	*3-341-161-01	LEVER, AZIMUTH	
218	3-578-138-01	SHIM (t=0.1)	
	3-578-138-11	SHIM (t=0.2)	
219	3-341-164-01	SPRING	
220	3-326-622-01	RETAINER, AZIMUTH	

No.	Part No.	Description	Remarks
221	7-685-105-19	SCREW (2X8), + PTPWH	
222	*3-337-884-11	GUIDE (D), WIRING	
223	3-701-437-01	WASHER (t=0.13)	
224	3-322-528-01	SPRING, TENSION	
225	*3-330-601-11	LEVER, MANUAL BUTTON	
226	3-322-595-01	SPRING	
227	3-701-443-11	WASHER (t=0.5)	
228	*3-322-590-02	LEVER, DIRECTION RELEASE	
229	3-322-511-01	CLAW, ERASING PROTECTION	
230	3-313-384-01	SPRING, TENSION	
231	7-621-770-87	SCREW +P 2.6X5	
233	3-322-507-01	ARM, EBF	
234	3-322-514-01	LINK (A)	
235	X-3337-810-1	CHASSIS (R) ASSY, HEAD	
904	*1-602-735-00	PC BOARD, PLUNGER	
HE301	1-543-649-11	HEAD, MAGNETIC (ERASE)	
HRP301	1-543-389-51	HEAD, MAGNETIC (REC/PB)	
M401	A-3133-210-A	MOTOR ASSY, DC (WITH PULLEY)	
PM401	1-454-355-00	SOLENOID, PLUNGER	